

ABSTRACT

A system for detecting and correcting impulse noise present on an input data signal includes an impulse detector module receiving an input data signal and producing as output an correction enable signal indicating when an impulse correction is required. An impulse corrector module receives the input data signal and a correction enable signal and produces a corrected data signal, e.g., having the impulse canceled or blanked, as output. A reliability estimator and selector module receives the corrected data signal and the input data signal and selects as output the input signal which is more reliable. In one embodiment, the impulse detector includes first and second complementary impulse detectors, the outputs of which are analyzed by an enable and correction module to produce an impulse detection signal with improved accuracy. Preferably, the enable and correction module also indicates the most appropriate type of impulse correction in accordance with the detection signals from the complementary detectors. A novel system and method of detecting impulses based on Gram Schmidt techniques is also presented. In this method, one or more channels of a multi-channel data signal are kept free of data. When a whitening filter is applied, impulses on these quiet channels are emphasized. The Gram Schmidt technique exploits this fact to provide for improved impulse detection. The system can be modified to detect other types of low dimensionality noise.